

I NEED TO KNOW ABOUT CRYOPRECIPITATE

Transfusion Fact Sheet Volume 2, Number 2
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What is cryoprecipitate?

Cryoprecipitate is a concentrated blood component made from fresh frozen plasma (FFP).

How is cryoprecipitate made?

FFP is thawed between 1–6 °C. During this thawing process, particles or residues appear. These residues are then collected and concentrated using a centrifuge. A centrifuge is a machine which rapidly spins units to get the heavier particles to fall to the bottom of a bag while the lighter liquid stays at the top. This non-dissolving residue is cryoprecipitate.

How long can it be stored?

Similar to FFP, cryoprecipitate is stored frozen for up to 12 months.

What is in cryoprecipitate?

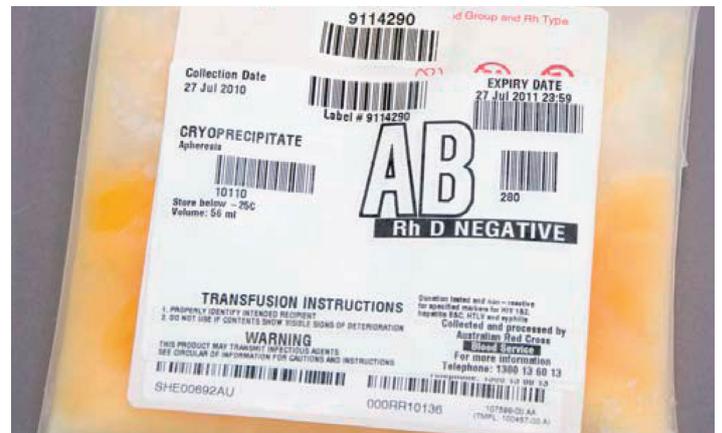
Cryoprecipitate contains specific protein molecules involved in blood clotting. The most important is fibrinogen, the precursor of fibrin. Each unit of cryoprecipitate has ≥ 140 mg of fibrinogen. Other blood clotting molecules contained in cryoprecipitate include factor VIII (the protein missing in patients with Haemophilia A), factor XIII (a fibrin stabiliser), von Willebrand factor (promotes platelet adhesion) and fibronectin (assists in cell communications).

What does fibrinogen do?

Fibrinogen is produced in the liver. It is converted to fibrin once activated by injury or bleeding. Fibrin creates a cross-linked mesh (resembling a network of fibres), holding together the initial platelet plug, which was described in our fact sheet *I Need to Know About Platelets*, Vol 1, No 4. This fibrous network completes the formation of blood clots. Hence, a decrease in fibrinogen levels or activity promotes bleeding.

What is cryoprecipitate used for?

Cryoprecipitate is a source of fibrinogen. It is used in the treatment of patients without enough fibrinogen or when the patient's fibrinogen does not function properly. This is especially important when the decrease in fibrinogen levels or activity is associated with bleeding, an invasive procedure or trauma. Cryoprecipitate is really only used as a fibrinogen supplement. Better treatments are available for von Willebrand disease,



Haemophilia A and factor XIII deficiency, however cryoprecipitate contains the relevant proteins and could be used as treatment if absolutely necessary.

What conditions cause deficiency or decrease in fibrinogen?

Rarely, individuals can be born with deficient fibrinogen or abnormal fibrinogen molecules. Severe liver disease impairs the production of fibrinogen. Fibrinogen is often low due to trauma. Complications resulting from blood or infectious diseases can consume clotting proteins, including fibrinogen, as well. All these conditions promote bleeding tendencies.

How is cryoprecipitate prepared for transfusion?

From storage temperature of -25 °C or below, cryoprecipitate is thawed. It should be maintained at 20–24 °C until transfusion and used within 4–6 hours.

BLOOD FACT

In the mid-1960s, Dr Judith Pool discovered cryoprecipitate, which she referred to as 'murky stuff' at the bottom of thawed frozen plasma.